

The Primates, Carnivores and Ungulates of the Peninsular Region.

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This account of some of the animals of the Peninsular Region* will probably be of little service to the Zoologist and is not intended for him. But the Straits Asiatic Society has recently agreed to aid a survey of the mammalian fauna of the Malay Peninsula and its lay-members and other local residents who take an interest in such matters should be able with the aid of the keys—which apply only to Peninsular species *inter se*—together with the descriptions—which I have endeavoured to keep free from technicalities—to identify such animals of the three orders now dealt with as may come within the range of their experiences.

The first order contains the monkeys, which, owing to their similarity and near relationship to ourselves, are interesting to all; the other two include those more important and conspicuous mammals that, as big and small game, claim the attention of the shikari.

Of species marked with an asterisk our knowledge is still incomplete, and further information, particularly of their exact distribution beyond that given, is required; to ask for more assistance would probably be useless; nevertheless skins, however roughly made, if accompanied by skulls would be greatly valued.

The reference given as “Blanford” is to the volume entitled “Mammalia” by W. T. Blanford in the “Fauna of British India” Series; which for the time being presents the

* For a definition of the Peninsular Region and a complete enumeration of all the Mammals inhabiting it see Kloss, Journal F. M. S. Museums, Vol. II, No. 3.

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most complete account of the Malayan Mammals. The other references explain themselves and are to various journals or proceedings not so comprehensive or accessible.

Order PRIMATES.

(Man, Apes, Monkeys and Lemurs).

Key to the Suborders.

- A. Second digit of foot with a flat nail like those of the other toes: no interval between central upper incisors: bony orbit of skull completely enclosed behind ANTHROPOIDEA.
- B. Second digit of foot with a long claw differing from the nails of the other toes: an interval between the central upper incisors: bony orbit of skull not enclosed behind LEMUROIDEA.

Suborder ANTHROPOIDEA.

(Mankind and Monkeys).

Key to the Families.

- A. No tail: stature erect: great toe not opposable: arm shorter than leg: no interval between upper canines and incisors HOMINIDÆ.
- B. No tail: stature semi-erect: great toe opposable: arm longer than leg: an interval between upper canines and incisors SIMIIDÆ.
- C. Tail present: stature not erect: great toe opposable: arm not longer than leg: an interval between upper canines and incisors ... CERCOPITHECIDÆ.

Jour. Straits Branch

Family HOMINIDAE.

(Man).

Contains one species, Man, which differs so greatly from all other mammals on account of its highly developed opposable thumb and powers of speech that it is always given separate treatment.

Family SIMIIDAE.

(Man-like Apes).

Key to the Genera.

- A. A naked gular pouch beneath the chin SYMPHALANGUS.
 B. No naked gular pouch beneath the chin HYLOBATES.

Genus SYMPHALANGUS.

This genus contains the "Siamang," the largest ape inhabiting the Malay Peninsula. The arms are so long that the knuckles of the hand touch the ground when the animal is standing erect. Small naked callosities are present on the buttocks and a pronounced web connects the toes of the feet. The hair of the forearm is directed upwards towards the elbow and the species has a more developed chin than any other ape. The voice is very powerful.

- 1.* SYMPHALANGUS CONTINENTIS, Thomas. The Siamang. Ann. & Mag. Nat. Hist., Ser. 8, Vol. 1, p. 1908. *Hylobates syndactylus*, Flower, P. Z. S. 1898, p. 924; Robinson, Jour. F. M. S. Mus. 1905, p. 26. *Symphalangus syndactylus*, Bonhote, Jour. F. M. S. Mus. 1908, p. 2.

Malay name "Siamang."

Colour of fur black throughout with the exception of a scanty whitish patch on the chin. Naked skin of face, gular pouch, hands and feet black. Head and body about 20 inches.

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Limits of range in the Peninsula unknown, but the species is found throughout the F. M. S., especially in hilly country, from Upper Perak to Negri Sembilan and eastward to Gunong Tahan : not known in Johore.

Genus HYLOBATES.

The Gibbons are, with the exception of one species of *Symphalangus*, the smallest of the anthropoids. They have no naked gular sac, the membrane between the toes, though occasionally present, occurs only in a very modified form, the hair of the forearm grows towards the wrist and the mandible is relatively the lightest and most fragile of all the Simiidæ; otherwise their general resemblance to the Siamang is very close. Their cry is a series of loud ringing calls uttered most frequently in the early morning.

Key to the Species.

- A. Hands and feet distinctly whitish ... H. LAR.
B. Hands and feet of the same colour as body ... H. AGILIS.

2. HYLOBATES LAR, (Linn.) The White-handed Gibbon.
Blanford, p. 7.

Colour of fur varies from pale brownish buff (biscuit-colour) to sooty brown, and is sometimes piebald. The dark form is most numerous but individuals of every tint mate together and parents of one colour often have infants of the other. Hands feet and a ring of hair round the face whitish, always to be distinguished even in the palest individuals. Length of head and body about 18 inches.

Throughout the Peninsula but not in the adjacent islands.

- 3.* HYLOBATES AGILIS, F. Cuvier. The Agile Gibbon.
Cantor Jour. As. Soc. Bengal, 1846.

Resembles *Hylobates lar* in colour and in variability but hands and feet are always concolorous with the limbs and body.

In examples from the Larut Hills, Perak, some individuals show a narrow whitish brow-band broadening on the cheeks into bush-like whiskers (which sometimes include the ears and extend beyond them below) and then narrowing again on the throat leaving, in dark specimens, the chin and sides of throat dark. Others have only a brow-band white. Length of head and body about 18 inches.

One young specimen is brownish to ochraceous-buff with the entire head pale buff in strong contrast with the body.

A very large female from the same locality with a narrow brow-band has the same pale extent only indicated in her infant.

Limits of range in the Peninsula unknown but recorded from the Larut Hills, Perak, and from Temerloh, Pahang.

Family CERCOPITHECIDÆ.

(Monkeys).

Key to the Subfamilies.

- A. Cheek pouches absent; muzzle not pronounced;
tail always much longer than head and body
SEMNOPIITHECINÆ.
- B. Cheek pouches present; muzzle elongated; tail
variable, often shorter than head and body
CERCOPITHECINÆ.

Subfamily SEMNOPIITHECINÆ.

Genus PRESBYTES.

This genus contains a number of slender-limbed, crested monkeys of active habits and purely herbivorous diet. The stomach is divided into a number of pouches and from their habit of feeding mainly on leaves and young shoots the animals have been given the name of "leaf-monkeys:" they rarely

support confinement for any length of time. In the skull the nasal aperture extends considerably above the lower level of the orbits. The thumb is well developed and a row of stiff black hairs projects above the eyes. The young differ in colour from the adults. Malay name "Lotong."

Key to the Species.

- A. Last lower molar with five well-developed cusps;
inner side of thigh not lighter than outer side.
 - a. Colour blackish, hair of head growing
forward on crown and temples in three
distinct peaks P. CRISTATA.
 - b. Colour ashy, hair of head falling back-
wards from crown and nape and forming
a distinct flat nuchal cap ... P. OBSCURUS.
 - B. Last lower molar with only four cusps or with a very
rudimentary posterior fifth cusp; inner side of
thigh lighter than, and sharply margined from,
outer side; hair of head radiating from two
points on forehead and growing backwards on
temples, upwards on crown and nape in a
median ridge.
 - a. Colour blackish, sides of neck and rump
dark P. FEMORALIS.
 - b. Colour ashy, sides of neck and rump pale
... .. P. ALBOCINEREUS.
- 4.* PRESBYTES CRISTATA (Raffles). The Silvered Leaf-
Monkey. *Semnopithecus cristatus*, Cantor, Jour. As.
Soc. Bengal, 1846.

Malay name "Klabu."

Pelage black or sooty, strongly washed throughout with
silvery or yellowish white. Hands and feet and skin of face
black. Head and body about 21 inches, tail 30 inches.

Young, orange-yellow but rapidly assuming adult colouration which commences on crown and extremities.

The Peninsular representative of this lotong is known to me from the coasts of Perak and Selangor only; Cantor records it from Penang but his specimens probably came from Province Wellesley.

5. PRESBYTES OBSCURUS (Reid.) The Dusky Leaf-Monkey.

Semnopithecus obscurus, Blanford, p. 41.

Malay name "Chengkau."

Pelage ashy-grey to blackish-brown, slightly paler below; crest, tail and outer side of thighs silvery; hands and feet blackish; lips and chin clothed with white hairs. Skin of eyelids, lips and chin whitish to bluish pink. Head and body about 20 inches, tail 30.

Young, orange-yellow with darker crown and extremities.

Throughout the Peninsula. Penang and Langkawi Islands.

6. PRESBYTES FEMORALIS (Horsf.) The Banded Leaf-Monkey. *Semnopithecus femoralis*, Blanford, p. 42.

Malay name "Kaka."

General colour sooty or brownish black; crest, nape and back paler: hands and feet, terminal half of tail, forehead and cheeks black. Inner sides of arms, lower abdomen, and entire inner side of thigh, extending thence narrowly to heels whitish: the latter areas sharply margined. Sometimes a whitish stripe down the centre of chest and on the under side of base of tail. Skin of eyelids and lips pale. Head and body about 21 inches tail 30 inches.

Young, white with crown and end of tail black.

Throughout the Peninsula and Singapore Island.

Schlegel (Mus. Pays-Bas, VII, p. 47) has separated the Singapore animal under the name of *Semnopithecus neglectus*. The characters of this are:—black, slightly guzzled with whitish:

with hands, feet and temples clear black and nuchal crest and back sooty: middle line of chest, abdomen and inner side of limbs white: tail uniformly black. Animals of this form however also occur in Johore where they completely intergrade with those having the appearance described above.

- 7.* PRESBYTES ALBOCINEREUS (Cantor). The Pale Leaf-Monkey. *Semnopithecus albocinereus*, Cantor, Jour. As. Soc. Bengal, 1846. Bonhote, P.Z.S., 1900, p. 872. *Semnopithecus mitratus*, Flower, P.Z.S., 1900, p. 319. *Semnopithecus siamensis*, Thomas, P.Z.S., 1886, p. 72.

Typical pelage, ashy-brown above, forehead and temples darker; throat and sides of neck, inner sides of arms and legs, buttocks and outer sides of thighs much paler or white; hands, feet and tail blackish. Skin of eyelids and lips pale. Head and body about 21 inches, tail 30 inches.

Many individuals have their colouration less clearly defined than as described above and very nearly approach in appearance the browner phases of *P. femoralis*. From the latter however they can always be distinguished by their paler under surface and by the white areas which are always present to some degree on the sides of neck and buttocks. The two species are very closely related.

Young, darker than adult above and white below, colours distinctly margined.

Range not defined but recorded from Kelantan to Selangor in which latter locality it is very common.

Subfamily CERCOPITHECINÆ.

Genus MACACA.

The Macaques are stout-limbed, crestless monkeys with pronounced muzzles and a less striking colouration than the lotongs. The species vary greatly in length of tail. In the skull the nasal aperture is placed between the lower edge of the orbits and the extremity of the muzzle. In habit they

are semi-arboreal and their diet is both animal and vegetable : they thrive well in confinement.

Key to the Species.

- A. Tail more than three-fourths the length of head and body ... M. FASCICULARIS.
- B. Tail about one-third the length of head and body M. NEMESTRINA.
- C. Tail about two inches long only ... M. RUFESCENS.

8. *MACACA FASCICULARIS* (Raffles). The Crab-eating Macaque. *Macacus cynomolgus*, (Linn); Blanford p. 21.

Malay name "Krah."

Crown of head, neck and back a speckle of black and ochraceous giving a general golden-brown or rufous effect but becoming gradually greyish on the limbs, sides of neck, tail and under parts. Eyebrows black. Head and body about 20 inches; females smaller. In immature animals the tail is longer than the head and body, in adults it is often a little shorter.

Throughout the Peninsula and adjacent Islands.

9.* *MACACA NEMESTRINA* (Linn). The Pig-tailed Macaque. Blanford, p. 20.

Malay name "B'roh."

Males:—Eyebrows, centre of forehead, crown, upper nape, lumbar region, rump and upper side of tail sooty black, everywhere distinctly margined except on neck and back. Behind and above ears, the eyes, sides of forehead, cheeks, throat and chest and a small area surrounding the callosities greyish white; muzzle and abdomen yellow. A line from crown running round the front of ears mingled ochraceous and sooty. Under side of tail greyish-buff, tipped ochraceous. Remainder of pelage, including the back across shoulders, strongly annulated ochraceous-buff and sooty, producing a speckled russet effect darkest on sides and hind limbs which

are concolorous, the fore limbs being paler on the inner sides. Base of fur greyish white throughout except on crown and back. Only the pale grey and sooty areas are unspeckled, the grizzling being very marked across the shoulders. Head and body about 21 inches, tail 8 inches.

Females generally resemble the males but are much smaller, the dark areas are less intense and sharply margined, the annulations, except across the shoulders and on the sides, are very indistinct and there is no pale border to the callosities.

Mr. G. S. Miller in his paper on "The Monkeys of the *Macaca nemestrina* group," (Proc. U.S. Nat. Mus., Vol. XXIX, p. 555-563) has separated Tenasserim animals from the typical Sumatran form under the name of *Macaca adusta*.

His characters for the latter are :—fur distinctly annulated back so little darkened that the blackish tail forms a conspicuous contrast, noticeably paler than sides and thighs, canines not excessively heavy, skull broad.

In *Macaca nemestrina typica* the fur is either not annulated or indistinctly so, the back so dark that the blackish tail forms no noticable contrast with it, buttocks not noticeably paler than sides of thigh, canines excessively heavy and skull elongate.

The Peninsular animal as represented in specimens from the F.M.S. agrees with neither of these. In the concolorous back and tail it approaches *M. nemestrina* while in the strongly annulated fur and pale buttocks it agrees with *M. adusta*.

Skull and teeth however exactly resemble those of *M. nemestrina* from Sumatra as figured and cited by M. Miller except that the condylo-basilar, basilar and palatilar lengths are a little greater. Because of this and because I don't wish to make another geographical race out of the local representative of a group in which I think there is much individual variation, I have kept the older name for the Peninsular animal. It is possible however that the other form will also be found to occur in the northern districts of our area.

- 10.* *MACACAS RUFESCENS*, Anderson. The Ruddy Macaque. Anderson, Zoological Researches, 1879, p. 79. Bonhote, P.Z.S. 1900, p. 871.

Face red, most brilliant round the eyes. General colour of pelage a warm reddish brown, darker on the back. Crown light in colour, hair short and radiating from a central point. Tail about an inch long and covered with hair.

Only one authentic specimen is known from the Peninsula; a female collected at Patalung, 7th April, 1899, by Messrs. Evans and Laidlaw. The two previously collected examples in existence were purchased at Singapore and Calcutta. None of them are fully adult and further material is required before the standing of the species can be properly determined. (An adult female was obtained a few years ago by Dr. W. L. Abbott at Victoria Point, the southern extremity of Tenasserim, but it has not yet been reported upon).

Suborder **LEMUROIDEA.**

(**Lemurs**).

Only one genus, *Nycticebus*, of this suborder occurs in the Peninsular area. Young Malayan animals always have four upper incisors, though sometimes one or two are missing in adult individuals; the lower canines only differ from the incisors in their greater depth and the first premolar is so large as to be mistaken for a canine. The tail is very short as is the second digit of both hand and foot while the first of each is long, opposable and widely divergent. The fur is exceedingly dense and woolly and covers the face with the exception of the muzzle.

Genus **NYCTICEBUS.**

11. *NYCTICEBUS MALAYANUS* (Anderson). The Peninsular Slow Lemur. Anderson, Cat. Mamm., vol. I, p. 95. Stone and Rehn, Proc. Acad. Nat. Sci. Philadelphia, 1902, p. 138. Lydekker, P.Z.S., 1904, vol. II, p. 345, plate XXIII. Lyon, Proc. U.S. Nat. Mus., 1906,

p. 533. *Nycticebus tardigradus*, Blanford, p. 44.

Malay name "Kongkang."

Ochraceous, brown above, darkest on neck and shoulders where the white tips of the hairs cause a frosted appearance. Chest and temples greyish white. Limbs and underside much paler and greyer, owing to the bases of the hairs, which are dusky throughout, appearing through the shorter and scantier fur. A broad brown stripe down the centre of the back, not reaching the tail, branches on the crown into four and extends to the ears and eyes. There is a more or less distinct white stripe down the centre of the face. Length of head and body about 12 inches.

Throughout the Peninsula, Singapore, Penang and Junk Ceylon.

Other forms *Nycticebus coucang* and *N. cinereus* in which the general colour is duller and greyer and the face markings indistinct or obsolete occur in Burmah and Siam and may possibly extend into the northern portions of the Peninsula.

Order CARNIVORA.

(Flesh-eating Animals).

Key to the Families.

A. Auditory bullæ much dilated, rounded and divided into two chambers by a septum. Paroccipital processes flattened against the bullæ and not projecting behind. Condylod and glenoid foramina concealed or wanting.

- | | |
|----------------------------------------------------------------------------|------------|
| a. Head short; 3 or 4 upper cheek-teeth,* | |
| 3 lower; claws sharp, curved and completely retractile; toes 5-4 | FELIDÆ. |
| b. Head elongate; 5 or 6 cheek-teeth in each jaw; claws variable; toes 5-5 | VIVERRIDÆ. |

* All the teeth behind, but not including, the canine.

B. Auditory bullæ much dilated, rounded but not divided. Paroccipital processes flattened against bullæ but projecting behind. Condylloid and glenoid foramina distinct.

Head elongate; 6 upper cheek-teeth, 6 or 7
lower; claws blunt, not retractile; toes
5-4 CANIDÆ.

C. Auditory bullæ not rounded nor divided but flattened. Paroccipital processes prominent and quite free from bullæ. Condylloid and glenoid foramina distinct.

a. Size small; 4 or 5 upper-cheek teeth, 5 or
6 lower; toes 5-5 ... MUSTELIDÆ.

b. Size large; 6 upper cheek-teeth, 7 lower;
toes 5-5 URSIDÆ.

Family FELIDÆ.

(Cats).

Genus FELIS.

This is the only genus of the family occurring in the Peninsular region: it contains the cats, the most typical and specialised of flesh-eating mammals.

The claws which are large, sharp and moveable are actuated by powerful muscles and like the sharp-edged pointed teeth are peculiarly adapted for cutting and tearing flesh. The tongue is furnished with papillæ which form a rasp-like surface on it and enable the animals to lick the flesh from the bones of their prey. Many of the smaller species are arboreal in habits.

Key to the Species.

- | | | | |
|---------------------------------------|-----|-----|------------|
| A. Back and sides banded | ... | ... | F. TIGRIS. |
| B. Back and sides rosetted | ... | ... | F. PARDUS. |
| C. Back and sides blotched or marbled | | | |

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a. length of head and body more than 3 ft. F. NEBULOSA.

b. length of head and body less than 2ft. F. MARMORATA.

D. Back and sides unevenly spotted F. BENGALENSIS.

E. Back and sides unmarked

a. head and body about 30 inches, tail 20 inches
long F. TEMMINCKI.

b. head and body about 24 inches, tail 6 inches
long F. PLANICEPS.

12. FELIS TIGRIS, Linn. The Tiger. Blanford, p. 58. Flower,
P. Z. S. 1900, p. 322.

Malay name "Harimau."

Back and sides ochraceous to buff fading to white on the under surface; barred throughout with black except on the lower legs and feet. Head and body about 70 inches.

Throughout the Peninsula and Singapore. Flower states that tigers seem to be entirely absent from Penang but they have since been recorded.

13. FELIS PARDUS, Linn. The Leopard or Panther.
Blanford, p. 67.

Two forms of the leopard occur locally, a pale and a black (*Felis melas* of some authors). The presence of the latter variety has been connected with dense forests and a moist atmosphere: south of Malacca it practically replaces the other entirely.

Felis pardus typicus:—Ground colour above a variable brownish yellow, below whitish; rosettes and spots blackish. Malay name "Rimau bintang."

F. p. melas:—Ground colour throughout chestnut black; rosettes darker, lustrous, distinctly visible. Malay name "Rimau kumbong." Head and body about 480 inches.

Throughout the Peninsula, Singapore and (?) Penang.

Jour. Straits Branch

- 14.* *FELIS NEBULOSA*, Griffith. The Clouded Leopard.
Blanford, p. 72.

Malay name "Rimau akar."

Inferior in size to the tiger and leopard only. Ground colour greyish brown to buffy, paler or white below. Head spotted above, neck and back striped with broad black patches, sides blotched with large irregular dark patches with darker edge or else with uneven stripes. Lower parts and limbs spotted. Tail thickly furred. Head and body about 40 inches.

Throughout the Peninsula and (?) Singapore.

15. *FELIS MARMORATA*, Martin. The Marbled Cat.
Blanford, p. 74.

Malay name "Rimau dahan."

Head, throat, chest, front and inner sides of thighs bright buff; body pale grey washed with buff on centre of back, shoulders, limbs and tail; abdomen whitish. Head vermiculated with black; back and sides marbled with darker black-edged patches which become irregular black spots and blotches on the limbs and tail; two distinct black stripes down the top of head and neck and another down the rump. Back of ears with pale grey patches. Tail long and cylindrical, very densely furred. Head and body about 20 inches.

Throughout the Peninsula.

16. *FELIS BENGALENSIS*, Kerr. The Leopard Cat.
Blanford, p. 78.

Malay name "Kuching utan."

Above and outer sides of limbs pale brownish-buff, deepest along the back; below white. Head striped; body and limbs sprinkled with dark spots which are elongated along the back where they appear to form broken lines. Head and body about 24 inches.

Throughout the Peninsula and Singapore.

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17. *FELIS TEMMINCKI*, Vig. and Horsf. The Golden Cat.
Blanford, p. 75.

Malay name "Rimau anjing."

Uniformly coloured above chestnut to brown, darkest above, palest below; a few indistinct markings on the under side and the upper surface occasionally sprinkled with small obsolete spots. Head and body about 30 inches.

Throughout the Peninsula.

18. *FELIS PLANICEPS*, Vig. and Horsf. The Flat-headed Cat.
Blanford, p. 83.

Malay name "Rimau burong" or "Kuching jalang."

Uniformly coloured above a rich brown; the tips of the hairs light, causing a frosted appearance. Under surface and legs with obsolete bars. Sometimes small obsoletes spots visible on sides of body and legs. Head and body about 24 inches. Tail short.*

The Peninsula south of Province Wellesley.

Family VIVERRIDÆ.

(Civets and their allies, Mongooses).

Key to the Subfamilies.

- A. Claws strongly curved and more or less retractile
VIVERRINÆ.
B. Claws long, slightly curved, exserted, not retractile
HERPESTINÆ.

*The domestic cat of the Malays is remarkable on account of its short and peculiarly twisted and knotted tail. *Felis planiceps* tends to resemble it in this particular and the name of "Kuching jalang" is applied by Malays to both it and to the domestic cat when run wild!

Subfamily VIVERRINÆ.

Key to the genera.

- A. Tail more than one-third the length of head and body ; facial bristles normal.
- a* Ears not tufted, tail not prehensile.
- a*¹ Tarsus and meta-tarsus hairy behind ; tail with dark and light rings or semi-rings.
- a*² A black gorget.
- a*³ An erectile black dorsal mane. ... VIVERRA.
- b*³ No dorsal mane ... VIVERRICULA.
- b*² No black gorget
- a*³ Tail semi-ringed on basal portion only
HEMIGALE.
- b*³ Tail completely ringed throughout PRIONODON.
- b*¹ Tarsus half naked behind ; tail not ringed.
- a*² Teeth large ; a bare patch on lower abdomen ... PARADOXURUS.
- b*² Teeth small ; no naked patch on lower abdomen ... ARCTOGALIDIA.
- b* Ears tufted, tail prehensile ... ARCTICTIS.
- B. Tail less than one-third the length of head and body ; facial bristles exceedingly stout and numerous
CYNOGALE.

Genus VIVERRA.

The members of this genus are the largest of the true civets. They are rather coarsely furred animals with erectile stiff black crests running down the median line of the back and with ringed tails : both sexes possess glands which secrete an odorous substance. In habit they appear to be purely terrestrial.

Key to the Species.

- A. Dark and light rings on tail complete and separate;
sides of body indistinctly marbled ... V. ZIBETHA.
- B. Dark and light bars on tail incomplete and joined
above; sides of body distinctly spotted.
 - a. Dark bars on tail less than ten; spots on sides
large and not numerous ... V. MEGASPILA.
 - b. Dark bars on tail more than ten; spots on sides
small and very numerous ... V. TANGALUNGA.

19. VIVERRA ZIBETHA, Linn. The Large Indian Civet.
Blanford, p. 96.

Malay name "Musang jibet."

Ground colour grey or buffy grey, with indistinct dark marblings on the sides tending to form stripes on shoulders and thighs; feet dark. Head greyish, sides of muzzle white. Neck and chest boldly patterned with black and pale buff; black stripes down the centre of the back to the rump. Tail more than half the length of head and body, ringed blackish and pale, the dark rings, six or seven in number, broadest. Head and body about 32 inches, tail 16 inches.

Throughout the Peninsula, Singapore and Penang.

- 20.* VIVERRA MEGASPILA, Blyth. The Burmese Civet.
Blanford, p. 99.

Malay name "Musang jibet."

General colour greyish or brownish buff; a black median line down the back and tail; sides with large blackish spots (about 20 mm. in diameter) except on shoulders which are brown and slightly striped. Head greyish, sides of muzzle white. Sides of chest and neck boldly marked blackish and pale buff. Lower legs and feet dark. Tail less than half the length of head and body, terminal portion entirely blackish, basal portion like body, with three or four dark semi-rings.

Blanford gives 37 inches for the length of head and body, but all Peninsular examples I have seen are considerably smaller than the last species.

The Peninsula.

21.* *VIVERRA TANGALUNGA*, Grey. The Malayan Civet.

Malay name "Tangelunga."

General ground colour pale buffy-grey: a black median line along the back and tail; sides covered with rows of small blackish spots which sometimes tend to form stripes; under surface much paler and scarcely spotted. Head buffy grey, sides of muzzle white, a whitish patch below the eyes; back of ears with black bases and whitish tips; chin dark ashy grey; feet and lower portion of limbs blackish ashy.

Tail ringed black and buffy, there being about fifteen broken or indistinct pale bars which almost disappear on the terminal portion. Upper side of tail almost unbroken black, lower buffy. Head and body about 25 inches, tail 15 inches.

The Peninsula. The above description is taken from Perak specimens but the range is unknown.

(Bornean animals, which I have compared with local individuals, appear to differ slightly in having the pale tail bars broader and more distinct but rather fewer).

Genus *VIVERRICULA*.

Contains animals smaller than those of the preceding genus and more arboreal in habits. Nails more curved and the front toes smaller. Tail ringed but no stiff crest along the back. Only one species occurs here.

22.* *VIVERRICULA MALACCENSIS*, Gmel. The Smaller Civet.

Blanford, p. 100. Bonhote, A. M. N. H., 7, I, p. 119.

Malay name "Musang bulan."

General colour brownish grey to brownish yellow. Dark stripes on the back and rows of dark spots along the sides

sometimes indistinct: the stripes occasionally entirely absent. Neck with dark stripes and bars. Feet dark. Tail, more than two-thirds the length of head and body, with a light tip and seven light bands. Head and body about 25 inches.

Specimens of this animal seem to have been frequently sent home from the Peninsula during the first half of the last century but it is now decidedly rare. The suggestion has been made to me that it never was native but only an introduced cage animal that has not succeeded in establishing itself: as it is now found in such remote and unusual spots as the Comoro Islands and Socotra, I think this theory very reasonable.

Genus HEMIGALE.

The tree-civets of this genus are peculiar in being banded instead of striped and in having the hair on the back of the neck growing upwards. The soles of the feet are naked only to a small extent, the body and neck are elongated and slender and the muzzle is very pointed. One local species only.

- 23.* HEMIGALE HARDWICKEI (Gray). The Slender Banded Civet. Blanford, p. 117.

Malay name "Musang blang" or "Musang batu."

Ground colour pale brownish. Two dark brown stripes on the nape broadening on the shoulders, five or six broad bands across the back and others on the basal portion of the tail, the terminal half of which is dark brown. Face striped with dark brown. Head and body about 21 inches.

The Peninsula: recorded from Trang but not reaching Tenasserim.

Genus PRIONODON.

The Weasel-civets are of an exceedingly slender form and are clad with velvet-like fur. The feet are covered with hair beneath and are armed with sharp retractile claws: the tail is very long and cylindrical. They are the smallest members of the family.

- 24.* PRIONODON MACULOSUS, Blanford. The Malayan Weasel-Civet. Blanford, p. 104.

Malay name "Anga prau" or "Musang buah."

Ground colour pale whitish brown. Across the back six irregular dark brown patches bordered laterally by a broken longitudinal stripe and by a row of spots of dark brown. Two broad dark brown stripes on the nape, and a row of dark irregular spots on the sides of the neck. Outer sides of limbs spotted, inner sides and lower surface of body unmarked. Tail with seven dark brown rings and a pale tip. Length of head and body about 18 inches.

The Peninsula, known southward to Malacca.

(*P. gracilis*, a smaller species of similar colouration, occurring in the Archipelago, has also been reported from the Peninsula by Cantor. Blanford thinks however, from the dimensions given, that his specimen was *P. maculosus*. Photographs taken by myself of Sumatran animals collected in Siak show a similar colour pattern to that of mounted specimens of *P. maculosus* in the Perak Museum).

Genus PARADOXURUS.

The palm-civets are more numerous in the Peninsula than any other species of the related genera. They are of medium size and dull colouration; a large extent of the soles of the feet is naked and there is a naked patch on the lower abdomen: the claws are completely retractile. They are arboreal and nocturnal and subsist on a mixed diet. The Malay name for the genus is "Musang."

Key to the Species.

A. Body spotted or striped.

- a. Forehead with a distinct white cross-band; fur greyish, smooth and equal, skull and teeth robust.

- a*¹ Head and body more than 20 inches; dorsal stripes blackish and well defined.
- a*² Teeth normal, 4th upper cheek tooth not more than 9 mm. long P. HERMAPHRODITUS
- a*² Teeth very large, 4th upper cheek tooth more than 10 mm. long P. (H.) MACRODUS.
- b*¹ Head and body not more than 20 inches, dorsal markings brown and obsolete P. (H.) MILLERI.
- b.* Forehead only slightly grizzled, fur yellowish, skull and teeth slight P. MINOR.
- c.* Forehead with no trace of a pale band; fur blackish, ragged and long P. NIGER.
- B. Body not spotted nor striped.
- a.* Colour reddish brown P. LEUCOMYSTAX.
- b.* Colour dull buff P. (L.) ROBUSTUS.

25. PARADOXURUS HERMAPHRODITUS, Pallas. The Malayan Palm-Civet. Blanford, p. 108; P. Z. S., 1885, p. 794.

Malay name "Musang pandan" or "Musang ayam."

General colour brownish grey: back usually with three blackish stripes bordered laterally by indistinct rows of spots. Feet and tail blackish, tail sometimes tipped white. A broad pale band across the forehead running below the ears to sides of neck, sometimes a black stripe crossing this band above the nose. Top and sides of face blackish, muzzle pale, a white spot occasionally below the eyes. Under surface paler, unmarked, palest round the bare abdominal patch. Head and body about 22 inches.

Throughout the Peninsula and Islands (except Tioman) where it is the commonest musang.

- 25A.* PARADOXURUS HERMAPHRODITUS MACRODUS, Gray. The Large-toothed Palm-Civet. Gray, Cat. Mamm. Brit. Mus., 1869, p. 70. Blanford, P. Z. S., 1885, p. 801. Selater, Cat. Mamm. Ind., Mus., Vol. II. p. 246.

Externally does not differ appreciably from *P. hermaphroditus typicus* but has much larger teeth: the upper sectorial or fourth molar being nearly one-third as large again (11 x 8 mm.)

The Peninsula but exact range unknown.

26. PARADOXURUS (HERMAPHRODITUS) MILLERI, Kloss.
The Tioman Island Musang. Kloss, Jour. F. M. S. Museums, Vol. II, p. 143. *Paradoxurus hermaphroditus*, Miller, Proc. Washington Acad. Sci., 1900, p. 228.

Smaller than *P. hermaphroditus typicus*, paler throughout and with brown not black markings. General colour pale silvery drab-grey, dorsal stripes practically obsolete: basal half of tail above like back, distal portion blackish brown throughout. Limbs brown. Head and body 20 inches.

Tioman Island, Southern China Sea.

- 27.* PARADOXURUS NIGER, Desm. The Indian Palm-Civet.
Blanford, p. 106; P.Z.S. 1885 p. 792. Flower, P. Z.S., 1900, p. 328.

The Indian form of *P. hermaphroditus*.

General colour blackish or brownish fulvous; the hairs having fulvous bases with black tips causing the whole pelage to appear suffused with black. Black dorsal stripes indistinct and often only visible in the form of spots. Feet, greater part of legs and tail blackish, the latter sometimes tipped white. Face generally black or blackish, a pale spot below eyes and often another above and at roots of vibrissæ. Head and body about 22 inches.

The Peninsula; Perak, Trang (Abbott) and possibly northward to Tenasserim. Penang Id. (Flower).

- 28.* PARADOXURUS MINOR, Bonhote. The Small Palm Civet.
Bonhote, Fasciculi Malayenses, Zoology, p. 9.

Malay name "Musang pulut."

Above pale fulvous with five black stripes, the outer ones broken; flanks slightly spotted; below dull brownish grey.

Muzzle, limbs and lower part of throat very dark brown: hairs of forehead grizzled. A small white spot below eye. Tail black except the tip which is white.

In every way a far smaller animal than the other members of the genus, skull especially much less robust and teeth much smaller. Head and body about 19 inches.

Known at present from Jalor and Perak, Malay Peninsula.

29. *PARADOXURUS LEUCOMYSTAX*, (Gray). The White-whiskered Palm-Civet. Blanford, P.Z.S., 1885, p. 805. Gray, Cat. Mamm. Brit. Mus., 1869, p. 73.

Malay name "Musang bulan" or "Musang tenggalong."

No spots or stripes.

General colour reddish brown, paler and yellower below; the entire upper surface slightly grizzled. Sides of head from eye to ear and extending to sides of neck bright buffy: front of face and throat occasionally similar. Ears and sides of muzzle, nape, shoulders, fore limbs, hind feet and tail variably blackish-brown. The tip of tail sometimes buffy. Whiskers yellowish white. Head and body about 28 inches.

The Peninsula and Singapore Island.

- 30.* *PARADOXURUS LEUCOMYSTAX ROBUSTUS*, Miller. The Paler White-whiskered Palm-Civet. Miller, Proc. Biol. Soc. Washington, 1906, p. 26.

Like *Paradoxurus leucomystax typicus* but smaller and paler. General colour dull buff, the back darker, being tinged with russet-brown and having the hairs everywhere black-tipped; but the darkening inconspicuous except on crown, neck and shoulders. Upper half of cheeks light buff, clearer than that of body; chin and throat darker. Feet, ears and tip of tail blackish. Whiskers pale buff. Head and body about 25 inches.

The Peninsula, where it is a possibly the northern form of the last species: type from Trang. Two old mounted speci-

meus in the Perak Museum from Larut and Kuala Kangsar appear referable to this species but the feet, ears and tail tip are russet rather than blackish: this difference is probably due to fading.

Genus ARCTOGALIDIA.

The Arctogales or Small-toothed Palm-Civets are in every way less robustly formed than the animals of the preceding genus: the teeth being notably smaller. There is no bald tract on the abdomen but the soles are naked to a greater extent and the first toe of both fore and hind feet is more divergent. The tail is semi-prehensile and in habit the animals are purely arboreal.

Key to the Species.

- A. Back indistinctly striped, ears tipped whitish. A. LEUCOTIS.
 B. Back clearly striped, ears black. ... A. MAJOR.

- 31.* ARCTOGALIDIA LEUCOTIS (Blyth). The White-eared Small-toothed Palm-Civet. Blanford, p. 115.

Malay name "Musang akar."

General colour above fulvous to dusky grey, sometimes brown; dull buffy below, always much paler. Three black stripes along the back, often broken or very indistinct. Sides of neck pale like lower parts: face, feet and end of tail dark brown or black. A narrow white line down the front of face to nose. Tips of ears whitish. Fur very soft. Head and body about 21 inches.

The Peninsula but range uncertain. Langkawi Id.

- 32.* ARCTOGALIDIA MAJOR, Miller. The Black-eared Small-toothed Palm-Civet. Miller, Proc. Biol. Soc. Washington, 1906, p. 25.

General colour above light brown, the back silvery; sides of body, neck and legs washed with ochraceous-buff: below

dull greyish ochraceous-buff. Back heavily striped with three clear black lines. Face, feet and end of tail black, basal half of tail faintly banded. Ears black. Head and body about 22 inches.

The Peninsula but only known from Trang.

Genus ARCTICTIS.

Contains one species only. Tail truly prehensile; ears tufted; soles naked; claws short, semi-retractile; fur coarse and long. In habits nocturnal, arboreal, omnivorous.

33. ARCTICTIS BINTURONG, (Raffles). The Binturong or Bear-Civet. Blanford, p. 118.

Malay name "Binturong" or "Menurong."

Black, grizzled with white or yellowish but mostly so on limbs and face. Ears bordered with white, ear-tufts black. Tail bushy and tapering. Head and body about 30 inches.

Throughout the Peninsula.

Genus CYNOGALE.

One species only, an-aquatic member of the Viverridæ. Feet webbed; muzzle broad; body stout; under-fur very dense and soft; numerous long and stiff white bristles growing from muzzle, cheeks and from above eyes. Tail about one-fourth the length of head and body. Teeth with long cusps.

- 34.* CYNOGALE BENNETTI, Gray. The Cynogale or Otter-Civet. Blanford, p. 119.

Malay name "Musang babi."

General colour dark reddish brown, the longer hairs with whitish tips giving a speckled appearance to the body: head and throat paler. Head and body about 26 inches, tail 8 inches.

The Peninsula, south of Province Wellesley.

Subfamily HERPESTINÆ.

Genus HERPESTES.

The Mongooses have the body slender, muzzle pointed and naked, ears short and rounded. tail tapering and covered with long coarse hair. The claws are long, straight, non-retractile, and the eye is, as a rule, completely ringed with bone. The species are carnivorous and terrestrial, living in holes.

Malay name "Bambun."

Key to the Species.

A. Pelage speckled throughout.

a. Size larger, head and body more than 15 inches :
naked sole extending to heel: fur long and
rather ragged ... H. MUNGO.

b. Size smaller, head and body not more than
15 inches : naked sole not extending to heel :
fur short and fairly even ... H. A. BIRMANICUS.

B. Pelage not entirely speckled.

a. Colour blackish brown, tail considerably less
than half the length of head and body
H. BRACHYURUS.

b. Colour reddish-brown, tail rather more than
half the length of head and body H. JAVANICUS.

5.* HERPESTES MUNGO (Gmel). The Common Indian
Mongoose. Blanford, p. 123.

Greyish-brown speckled whitish throughout, paler below ;
sometimes a ferruginous tint on head and feet or ferruginous
throughout. Long hairs of back annulated dark and light,
four or five rings of each. Naked portion of soles narrow at
heel. Head and body about 16 inches, tail about 14 inches.

The Peninsula, but range unknown.

- 35A.* HERPESTES AUROPUNCTATUS BIRMANICUS, Thomas.
The Little Burmese Mongoose. Thomas, A. M. N. H.
Ser. 5, XVII, p. 84, (1886). Blanford, p. 122.

Dark brown, finely speckled throughout with buffy or whitish grey, very little paler below: feet darker; head and cheeks tinged ferruginous. Base of fur dark brown: the long hairs of back annulated dark and light, two or three rings of each. Naked portion of soles not extending to heel. Head and body about 14 inches long, tail without hairs 10 inches. Hind-foot without claws 2.25 inches.

Two small mounted specimens of Mongooses in the Perak Museum, recorded as coming from the vicinity of Taiping, appear referable to this species and I have therefore included it locally though I have not been able to examine skulls. It also occurs in Burmah, and probably replaces *H. auropunctatus*, Hodgson, to the eastward of the Bay of Bengal for though a single example of the latter was obtained by Cantor in the Malay Peninsula it was almost certainly introduced.

36. HERPESTES BRACHYURUS, Gray. The Short-tailed Mongoose. Anderson, Zool. Researches, p. 187.

General colour blackish-brown speckled with yellow especially on the fore body and shoulders. Head paler; face, sides and top of muzzle pale yellowish brown, cheeks similar but grizzled. Chin and throat rusty yellowish brown. Fore limbs and lower half of hind limbs dark brown, unspotted. Hairs of tail broadly tipped with black which almost obscure the pale speckle. Only half of the soles naked. Head and body about 18 inches, tail without hairs about 8 inches.

Southern half of the Peninsula where it is the commonest mongoose.

- 37.* HERPESTES JAVANICUS (Geoffr.) The Javan Mongoose.
Bonhote P. Z. S. 1900, p. 873. Anderson, Zool.
Researches, p. 186.

General colour speckled rufous olive-brown, dark on back, darker still and more rufous on the upper head and cheeks

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which are very finely speckled. Under side of neck, chin and chest rufous-yellow without speckling. Lower half of limbs altogether dark brown. Soles naked along the central line nearly to heel. Head and body about 17 inches, tail without hairs 11 inches.

The Peninsula but not known in the North.

Family CANIDÆ.

(Dogs)

Key to the Genera.

- A. Six lower cheek teeth aside including two true molars
 CYON.
- B. Seven lower cheek teeth aside including three true
 molars CANIS.

Genus CYON.

Fur harsh ; a moderate brush ; long hairs between the pads of the feet ; inner surfaces of ears densely furred ; claws strong and blunt. Muzzle moderately long and slightly convex above. Inhabitants of forest where they hunt in packs.

38. CYON RUTILANS (S. Müll). The Malay Wild Dog.
 Blanford, p. 847.

Malay name "Srigala" or "Anjing utan."

Above tawny brown ; throat, fore neck, under parts and inner sides of legs paler, often dull whitish. Tail bushy and blackish with the basal portion tawny. Head and body about 33 inches.

Throughout the Peninsula.

(There is in the Perak Museum a reputed hybrid between this species and the Sakai dog. While in colour it nearly approaches the latter, being dull buffy throughout, in size and form it resembles *Cyon rutilans*. It possesses however the seven lower cheek-teeth of the true dog.)

Genus CANIS.

This genus, which includes the wolves, jackals and domestic dogs, is represented here by the latter animal only. Some of the forms bear a superficial resemblance to the local member of the last genus, but the elongate muzzle is straight or concave and the tail generally not bushy. Senses of smell and hearing acute: omnivorous.

38A. CANIS FAMILIARIS, Linn. The Pariah Dog.

Malay name "Anjing."

Colour very variable, though generally buff to tawny. Easily recognised on account of its vociferous animosity to Europeans.

Every Kampong in the Peninsular region.

Family MUSTELIDÆ.

(Martens, Weasels, Hog-badgers and Otters).

Key to the Subfamilies.

- A. Claws narrow, much curved, sharp and often semi-retractile; toes partially webbed; upper and lower cheek teeth unequal in number. Terrestrial and arboreal MUSTELINÆ.
- B. Claws much lengthened, slightly curved, blunt and non-retractile: upper and lower cheek teeth unequal in number. Terrestrial, living in holes and fissures MELINÆ.
- C. Claws broad, slightly curved, blunt and non-retractile; toes webbed; upper and lower cheek teeth equal in number. Aquatic. LUTRINÆ.

Subfamily MUSTELINÆ.

Key to the Genera.

- A. Five upper cheek-teeth, six lower ... MUSTELA.
- B. Four upper cheek-teeth, five lower ... PUTORIUS.

Genus MUSTELA.

Body long and slender, limbs rather short, claws cat-like, tail cylindrical. Habits principally arboreal. Onelocal species in which the soles are naked.

39. *MUSTELA FLAVIGULA PENINSULARIS*, Bonhote. The Malayan Marten. Bonhote Ann. Mag. Nat. Hist. (7) p. 346. *Mustela flavigula*, Blanford, p. 158.

Malay name "Anga prau" or "Musang pisang."

Face, crown, limbs, posterior half of back and tail vandyke-brown becoming light raw umber on back of neck, shoulders and fore half of back, and blackish on tail and hind limbs. Chin dull white. Throat, sides of neck and chest bright buff, bordered on each side by a dark brown stripe from the ear. Under surface duller than the back with occasionally a buff patch on the abdomen. Head and body about 20 inches.

Throughout the Peninsula.

Genus PUTORIUS.

Body very slender and elongate, limbs short, tail cylindrical and bushy, fur coarse. Claws curved and exceedingly sharp. Arboreal and predatory.

40. *PUTORIUS NUDIPES* (F. Cuvier). The Malayan Weasel. Blanford, p. 171.

Malay name "Anga prau" or "Jelu masak pisang."

General colour golden-ochraceous to tawny, palest towards end of tail. Head, below and above to behind ears, white. Head and body about 13 inches.

The Peninsula.

Subfamily MELINÆ.

Genus ARCTONYX.

Body and limbs stout; tail moderately short; ears very short and rounded; soles of feet entirely naked except in hind feet; hair coarse and long with woolly under-fur.

The hog-badgers closely resemble the pigs in their long, mobile and naked snouts which are truncated with the nostrils placed in the terminal disc.

40A.* ARCTONYX COLLARIS, F. Cuvier. The Hog-badger. Blanford, p. 178.

Colour dirty grey, slightly washed with blackish above where the long hairs on back and sides have black tips. Head white with variable dark markings but the area surrounding the eye always white. Throat, sides of neck and tail whitish: lower parts and limbs dusky, the latter sometimes black. Head and body about 30 inches, tail 10 inches.

The only record from the Peninsula is that of a pair obtained in Trang by Dr. W. L. Abbott in 1896. The species is well known in Tenasserim and Burnah.

Subfamily LUTRINÆ.

Genus LUTRA.

Feet round and webbed, claws blunt, head broad and flat, ears small, tail moderate, limbs short, body round and elongated. Upper and lower cheek-teeth five aside, last upper molars very large and square. Fur dense and woolly at base. Aquatic.

Malay name "Mrang-mrang" or "Anjing ayer."

Key to the Species.

- A. Claws absent or rudimentary; size small L. CINEREA.
- B. Claws present and well developed.
 - a. Nose entirely hairy, size large L. SUMATRANA.
 - b. Nose naked, upper margin of naked area
nearly straight ... L. MACRODUS.

41. LUTRA CINEREA, Illiger. The Small Clawless Otter, Thomas, P. Z. S., 1889, p. 190. *Lutra leptonyx*. Blanford, p. 187.

Colour brown but slightly paler below. Lips, cheeks from eye to ear, sides of neck and throat whitish. Head and body about 20 inches.

Throughout the Peninsula and Singapore where it is the commonest of the otters.

- 42.* *LUTRA SUMATRANA*, Gray. The Hairy-nosed Malay Otter. Blanford, p. 187. Anderson, Zool. Researches, plates X-XII.

Colour brown, the inner sides of limbs and side of head and neck paler. Lips, chin and throat whitish, but the white area not extending to the chest. Head and body about 30 inches.

The Peninsula: Singapore and Langkawi Island.

- 43.* *LUTRA MACRODUS*, Gray. The Large-toothed Smooth Otter. *Lutra ellioti*, Blanford, p. 185.

Colour brown, feet paler, abdomen whitish brown. Lips, cheeks to eye, sides of neck, throat and chest whitish. Head and body about 25 inches.

The Peninsula.

(Although *Lutra vulgaris*, the common otter, has been included at times in the Peninsular fauna, there is no satisfactory proof of its occurrence).

Family URSIDÆ.

(Bears).

Genus URSUS.

Feet large, plantigrade with naked soles; claws long and curved, non-retractile; ears small, rounded, hairy; tail very short.

44. *URSUS MALAYANUS*, Raffles. The Malay Bear.
Blanford, p. 199.

Malay name "Bruang."

Colour blackish with a white crescentic patch on the chest and a whitish muzzle and face. Head and body about 50 inches.

Throughout the Peninsula.

Order UNGULATA.

(Hoofed Quadrupeds).

Key to the Suborders.

- A. A long flexible proboscis PROBOSCIDEA.
B. No long flexible proboscis

a. Number of toes odd; no pair of lateral
horny digits towards the back of the feet
PERISSODACTYLA

b. Number of toes even; a pair of external
horny digits towards the back of each foot
ARTIODACTYLA.

Suborder PROBOSCIDEA.

(Long-nosed Ungulates).

Family ELEPHANTIDÆ.

(Elephants).

Genus ELEPHAS.

The elephants are the largest of terrestrial mammals and exhibit many peculiarities of structure. The tusks are not enlarged canines but incisors: the bones of the limbs are set vertically above each other and owing to the length of the upper segments the elbow and knee are less enclosed within the body-skin than is the case with other ungulates. A further unusual feature is that when resting the fore-feet are stretched out in front and the hind limbs to the rear. The brain is extremely small and lies far back between the ear-holes. By

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many zoologists elephants are considered to be closely connected with the rodents.

45. ELEPHAS MAXIMUS, Linn. The Elephant.

Blanford p. 463.

Malay name "Gajah"

Skin nearly naked, blackish grey throughout. An albinistic form occurs. Height at shoulder 8 to 9 feet.

Throughout the Peninsula.

Suborder PERISSODACTYLA.

(Odd-toed Ungulates).

Key to the Families.

A. Three digits on each foot; horns above the nose

RHINOCEROTIDÆ.

B. Four digits on fore-feet, three on hind; no horns

TAPIRIDÆ.

Family RHINOCEROTIDÆ.

(Rhinoceroses).

Genus RHINOCEROS.

The animals of this genus are clothed with a very thick skin which in places grows in folds. Their horns, composed of hardened skin, grow throughout life and if lost are reproduced.

Malay name "Badak."

Key to the Species.

A. A single horn on the nose; body practically hairless

R. SONDAICUS.

B. Two horns on the nose; body thinly clad with long
bristles

R. SUMATRENSIS.

36 PRIMATES, CARNIVORES AND UNGULATES

- 46.* RHINOCEROS SONDAICUS, Cuv. The Smaller One-horned Rhinoceros. Blanford p. 474.

Skin practically naked, mosaic-like, folded; blackish-grey throughout. A single horn. Height at shoulder $5\frac{1}{2}$ feet.

The Peninsula.

47. RHINOCEROS SUMATRENSIS, Cuv. The Two-horned Rhinoceros. Blanford p. 477.

Skin thinly clad with long hairs, granular, slightly folded, brownish. Two horns, the foremost largest. Height at shoulder 4 feet.

Throughout the Peninsula.

Family TAPIRIDÆ.

(Tapirs).

Genus TAPIRUS.

The Tapirs are stoutly-built harmless animals with the nose and upper lip produced into short non-flexible snout. There are four toes on each fore-foot, three on each hind foot. They are inhabitants of swampy forest and are a notable instance of discontinuous distribution, one species being Malayan and the other four occurring in Central and South America.

48. TAPIRUS INDICUS, Cuv. The Malay Tapir.

Blanford p. 478.

Malay name "Tenoh" or "Badak himpit."

Adults blackish; with rump, upper thighs and tips of ears whitish. The young are striped with black, or brown, and white for the first half year of life. Height at shoulder about 40 inches.

Throughout the Peninsula.

Suborder **ARTIODACTYLA.**

(Even-toed Ungulates).

Key to the Families.

- A. No upper incisors. Ruminant.
 - a. Horns present in males, sometimes in females.
 - a*¹ Horns permanent, a horny sheath on a bony core, unbranched ... BOVIDÆ.
 - b*¹ Horns deciduous, of solid bone, branched CERVIDÆ.
 - b. No horns. Size of animal very small ... TRAGULIDÆ.
- B. Upper incisors present. Non-ruminant ... SUIDÆ.

Family BOVIDÆ.

(Hollow-horned Ruminants).

Key to the Species.

- A. Size large. Horns inserted far apart and growing outwards from sides of head ... BOS.
- B. Size moderate. Horns inserted near together and growing upwards from forehead ... NEMORHÆDUS.

Genus BOS.

The wild cattle and the buffalo are large strongly-built animals with naked muzzles and tufted tails and frequently with large dewlaps. There is no excessive difference in size between the horns of the sexes.

Key to the Species.

- A. Horns round or oval in section.
 - a. No distinct dewlap, withers ending abruptly; skull convex between the horns, forehead deeply concave ... B. GAURUS HUBBACKI.

- b. A distinct dewlap, withers ending gradually; skull straight between horns, forehead flat or slightly convex B. SONDAICUS BUTLERI

B. Horns trigonal in section B. BUBALUS.

49. BOS GAURUS HUBBACKI, Lydekker. The Malayan Gaur or Sladang. *Bos gaurus*. Blanford p. 484; P. Z. S. 1890, p. 592.

Malay name "Sladang."

General colour brown, almost black in old bulls, rufous in young bulls and cows; paler below. Legs below knees and hocks white. Forehead above eyes often grey or whitish. Height at shoulder $5\frac{1}{2}$ to 6 feet. Horns decidedly curved, tips distinctly twisted inwards with close approach to each other: colour greenish, tipped black. Frontal area between the horns strongly ridged and inclined forward.

The Peninsula.

- 50.* BOS SONDAICUS BUTLERI, Lydekker. The Malayan Banteng, Lydekker, Field, Vol. CV, p. 151; Jour. F. M. S. Museums Vol. I, p. 61. *Bos sondaicus*, M. & S., Davison, P. Z. S., 1889 p. 447. *Bos sondaicus?* Butler, J. Bombay N. H. S. Vol. XIII, p. 192 and plate.

Malay name "Sapi," "Banteng" or "Tembadau."

General colour blackish in old bulls, rufous in other animals, stockings from below knees and hocks reddish or blackish. No white rump patch. Horns in cows extremely small.

The Peninsula.

The validity of this race or sub-species is at present extremely doubtful. The only actual material on which it is founded is a skull obtained by Captain J. C. Lamprey in Perak and imagined to be that of a cow. The horns are about 6 inches in length. The animal was only

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discovered after having been mauled by a tiger and was described as being entirely of a rich reddish chestnut colour with no white rump patch and with blackish stockings and muzzle.

The second record is an observation record of an old bull, 18 hands high (!), called by the Malays "Sapio" and described by the late Mr. W. Davison as being black; with belly, inner sides of legs, and stockings chestnut. Forehead rusty grey and inner side of ears strongly tinged with chestnut. (A young bull with this appearance was shot in Jelebu by Dr. E. A. Travers). Juveniles are said to be entirely chestnut and cows to have the chestnut areas darker and richer than bulls.

Finally there is the description of a cow "Sapi" killed at Bukit Kepong on the Muar River in 1850 and described (Oxley, Jour. Ind. Arch. Vol. IV p. 354) as being much like the Bali Island race of *Bos sondaicus* but without the white patch on the buttocks; the horns small, curved inwards, white tipped with black; forehead flat with a tuft of long hair particularly in the bulls; the back curved, the highest point being at about the centre; total height 6 ft. 2 inches; the hair of a brown colour except on the feet which were dirty white; a mane about 2 inches long the whole length of the spine and no dewlap. Misled by the application of the name "Sapi" to it, this animal has hitherto been regarded as a specimen of the Banteng and so added to the uncertainty that already exists with regard to the appearance of the Peninsular form; it was however undoubtedly a Sladang. The absence of white on the rump; the parti-coloured horns, with pale bases and black inward-curving tips; the notable high withers and absence of dewlap are all differentiating features which are possessed by *Bos gaurus* but do not appear in the Banteng. The height given is doubtless a printer's error and should probably read 5 ft. 2 inches.

While the above descriptions indicate the presence of some form of red-legged bovine in the Peninsula there is as yet no certain evidence that they apply to any form of *Bos sondaicus*.

The chief characters of the typical Banteng are (Blanford p. 489):—General colour of old bulls blackish, of cows and young bulls bright reddish brown, approaching chestnut. Stockings below knees and hocks white. A white rump patch. Lips and inner sides of ears white. A pronounced dewlap. Height at shoulder 5 to $5\frac{1}{2}$ feet.

Horns somewhat spreading, tips distinctly twisted forward with slight approach to each other, colour blackish throughout.

50A. *BOS BUBALUS*, Linn. The Buffalo. Blanford p. 491. Malay name "Kerbau."

Colour generally greyish black, but there is also a white form. Height at shoulder 5 to $5\frac{1}{2}$ feet. Horns heavy, flattened and transversely wrinkled, varying from almost straight to an almost complete convolution: colour black.

Throughout the Peninsula in a domesticated, and probably also in a feral, state.

Genus *NEMORHÆDUS*.

The representatives of this genus are large goat-like animals with slightly curved pointed horns growing upwards in the plane of the face and large stiff manes. The tail is short and hairy, the legs are long and the hoofs moderately large. Hair coarse and shaggy. They inhabit jungle-covered mountains but are occasionally found at sea-level.

Key to the Species.

A. A considerable quantity of red in mane and on the pale patch on the throat ... N. (S.) SWETTENHAMI.

B. Scarcely any red in mane or on the patch on throat ... N. (S.) ROBINSONI.

51.* *NEMORHÆDUS* (*SUMATRENSIS*) SWETTENHAMI, Butler. Swettenham's Serow or Goat-antelope. Butler, P. Z.

Jour. Straits Branch

S., 1900, p. 675. *Nemorhædus sumatrensis*, Blanford, p. 515.

Malay name "Kambing gurun."

General colour black, but mane, back and rump appearing grizzled owing to the visibility of the fulvous-white bases of the long hairs: the mane palest. Fetlocks grizzled with fulvous brown and hoofs slightly bordered with whitish. Abdomen and inner sides of thighs fulvous. Muzzle pale: a broad fulvous-white streak continued for a short distance behind the angle of the mouth: throat grizzled fulvous-white: edges and inner side of ears white. Height at shoulder 37 inches, (from type female in the Perak Museum).

The Peninsula but range inknown.

51A.* NEMORHÆDUS SWETTENHAMI ROBINSONI. Pocock. Robinson's Serow. Pocock, P. Z. S. 1908 part 11, p. 185.

This sub-species which has been described from Selangor specimens differs from the last in lacking the red element in mane and throat patch. The distinction is one of very doubtful value and is possibly one due to individual variation.

Known from Perak and Selangor.

Family CERVIDÆ.

(The solid-horned Ruminants).

Key to the Genera.

- | | |
|----------------------------------------------------------------------------|-----------|
| A. Antlers short, pedicils long: lateral horny digits | |
| small | CERVULUS. |
| B. Antlers long, pedicils short; lateral horny digits | |
| large | CERVUS. |

Genus CERVULUS.

The barking-deer are moderate-sized animals having, in the males, short antlers with the beam curved inwards at the tip

and a very short brow-tine at the base: there are also large upper canines. In females the canine is small and there are mere tufts of hair in place of the antlers. In both sexes there is a marked bony ridge down each side of the face. The lateral toes are much reduced in size externally and all trace of the bony phalanges has disappeared.

52. *CERVULUS MUNTJAC GRANDICORNIS*, Lydekker. The Large-horned Barking-Deer Lydekker. Field, vol. CIV, p. 780. *Cervulus muntjac*, Blanford p. 533.

Malay name, "Kijang."

General colour tawny, deepest along the back, paler on cheeks and throat. Crown, stripes down face, front of fore-legs, and of hind legs below hocks only, dark brown. Throat, abdomen, inner sides of hind-legs and of fore-legs to knees and two long patches on chest, white. Tail bushy, deep fulvous above white below, (from female from South Johore). Height at shoulder about 22 inches.

Genus *CERVUS*.

The only Malayan deer is of large size with antlers longer than the head in the male but entirely wanting in the female. There is a large gland present in front of either eye and the canines are never large. Hair coarse and close: male with an erectile mane.

53. *CERVUS UNICOLOR EQUINUS*, Cuvier. The Malayan Sambar, Cantor. Jour. As. Soc. Bengal, 1846, p. 271. *Cervus unicolor*, Blanford p. 543.

Malay name "Rusa."

General colour dull brown, slightly paler below: females are brighter. Height at shoulder 4 to 4½ feet. The antlers are normally three-tined.

Throughout the Peninsula and Singapore.

Family TRAGULIDÆ.

(The Chevrotains or Mouse-deer).

Genus TRAGULUS.

The Mouse-deer are small animals, entirely hornless but with long sharp canines present in the upper jaw of the males. The lateral horny toes are well-developed and there is a bare glandular patch on the under-side of the mandible. They are forest dwellers of crepuscular habits.

The animals of this genus form two very distinct groups—the Napu and the Plandok; the members of the latter being much the smaller in size: their total length (tip of nose to end of tail) being rarely more than the head-and-body length of the others.

Key to the Species.

- A. Size larger; white outer throat stripes either broken or much deflected in centre.
 - a. General colour yellowish-ochraceous: nape stripe distinct ... T. (JAVANICUS) CANESCENS.
 - ... T. (C.) UMBRINUS.
 - b. General colour bright-tawny: nape stripe obsolete ... T. (J.) RUFULUS.
- B. Size smaller; white outer throat stripes running unbroken and straight from jaw to shoulder.
 - ... T. (KANCHIL) RAVUS.
 - ... T. (R.) LANCAVENSIS.
 - ... T. (R.) RAVULUS.

54. TRAGULUS (JAVANICUS) CANESCENS, Miller. The Larger Mouse-deer or Napu. Miller Proc. Biol. Soc. Washington, 1900, p. 185. *Tragulus napu*, Blanford, p. 557.

Malay name "Napu" and "Munkonong."

44 PRIMATES, CARNIVORES AND UNGULATES

Clouded with black throughout except throat stripes, chest, part of abdomen and front of thighs which are pure white. Back ochraceous fading to creamy white on sides. Fore-legs like back but less blackened, a patch of clear fulvous on hind-legs. A dark stripe along top of head and nape, expanding on the crown. Area between posterior neck stripes blackish, centre of abdomen like sides. Under side of tail white. Head and body about 22 inches.

Throughout the Peninsula and Singapore.

55. *TRAGULUS (CANESCENS) UMBRINUS*, Miller. The Langkawi Napu, Miller, Proc. Biol. Soc. Washington, 1900, p. 191.

Like *T. canescens* but smaller, yellower and darker. Colour pattern closely resembles the mainland form but is more clouded with black. Back ochraceous, sides buffy, nape-stripe less defined, dark area on throat more extensive and white of abdomen more confined. Head and body about 20 inches.

Langkawi Island: and also Teretau Island, specimens from which do not appear to be separable.

56. *TRAGULUS (JAVANICUS) RUFULUS*, Miller. The Tioman Ruddy Napu. Miller, Proc. Washington. Acad. Sci., 1900, p. 227.

General colour bright tawny tinged with red on the rump, and becoming ochraceous on the sides, purest on the neck and dullest on the face. Back and sides clouded with black. Upper nape stripe obsolete. Throat stripes, chest, inner sides of limbs, abdomen and under side of tail white. Centre of abdomen pale ochraceous. Head and body about 20 inches.

Tioman Island.

57. *TRAGULUS (KANCHIL) RAVUS*, Miller. The Small Mouse-deer or Plandok. Miller, Proc. Biol. Soc. Washington,

Jour. Straits Branch

1902 p. 174. *Pragulus javanicus*, Blanford p. 556.

Malay name "Plandok" or Kanchil.

Back and sides ochraceous-buff heavily clouded with black, palest on sides. Fore-legs, shoulders and sides of neck, scantily clouded ochraceous, purest on legs. Thighs tinged with ochraceous. Face like back; a black stripe along nape from ears expanding on the shoulders. Throat stripes, chest, abdomen, inner sides of limbs and under side of tail pure white. Area between throat stripes a grizzle of black and ochraceous continued in a narrow line down chest to abdomen where it expands becoming ochraceous buff. Head and body about 18 inches.

The Peninsula and Singapore.

58. *TRAGULUS (RAVUS) LANCAVENSIS*, Miller. The Lankawi Plandok. Miller, Proc. Biol. Soc. Washington, 1903, p. 41.

Like *T. ravus* but yellower and much lighter owing to the lesser quantity of the black element. Dark nape stripe almost obsolete.

Colour pattern similar to the mainland form but back less clouded, limbs and tail more fulvous. Under parts more ochraceous and dark throat-area less grizzled. Head and body about 18 inches.

Langkawi Island.

59. *TRAGULUS (RAVUS) RAVULUS*, Miller. The Adang Plandok. Miller, Proc. Biol. Soc. Washington, 1903 p. 41.

Like *T. ravus* but smaller, neck paler and nape-stripe less clearly defined.

Back and sides light ochraceous-buff clouded with black which is slightly in excess above. Neck lighter ochraceous than in the mainland form. Head and body about 18 inches.

Pulo Adang, Butang Islands.

Family SUIDÆ.

(Pigs).

Genus SUS.

The pigs possess four completely developed toes and an elongate narrow snout terminating in a flat disc wherein are the nostrils: the upper canines are curved outwards and upwards and in the boars often attain a very large size. They are furnished with upper incisors and the lower incisors project almost horizontally. A crest or mane runs along the greater portion of the back and the body is scantily clad with coarse bristles.

- A. Last lower molar with at least three cross ridges and a large terminal heel ... S. JUBATUS.
 ... S. (J.) JUBATUS.
- B. Last lower molar with not more than three cross ridges the posterior being often reduced to a single median tubercle ... S. PENINSULARIS.

60.* SUS CRISTATUS JUBATUS, Miller. The Malayan Maned Pig. Miller, Proc. U. S. Nat. Museum, vol. XXX, p. 745. *Sus Cristatus*, Blanford, p. 560.

Malay name "Babi utan."

General colour blackish, variably grizzled with brown and whitish: a light area behind the angle of the mouth. Mane well developed, ear only slightly fringed.

Posterior molar (wisdom tooth) in lower jaw with at least three cross ridges and a large terminal heel representing a modified fourth cross ridge and with small cusps situated centrally between these ridges in addition.

Height at shoulder about 30 inches, upper length of skull 15 inches.

The Peninsula but so far only known from Lower Siam and the more northern parts of the F. M. S. Limits of range not definitely ascertained.

61. *SUS (JUBATUS) JUBATULUS*, Miller. The Island Crested Pig. Miller, Proc. U. S. Nat. Museum, vol. XXX, p. 746.

Like *S. jubatus* but smaller and with posterior molars slightly more complicated. Height at shoulder about 26 inches, upper length of skull about $12\frac{1}{2}$ inches.

Teretau and Langkawi Islands off the West Coast.

- 62.* *SUS (VITTATUS) PENINSULARIS*. The Peninsular Striped Pig. Miller, Proc. U. S. Nat. Museum, vol. XXX, p. 749.

Malay name "Babi utan" or Babi bakau."

Like *Sus jubatus* but with a notable sprinkling of reddish bristles on the posterior half of back.

Compared with the other pigs of this region it is immediately recognisable by the reduced condition of the last molar; in the lower jaw it may terminate abruptly at the third cross ridge which is often reduced to a single median tubercle, or a minute supplemental tubercle may occur behind this ridge.

Height at shoulder about 28 inches, upper length of skull $13\frac{1}{2}$ inches.

This is the largest member of the *vittatus* group of island pigs and is the only one found on the Asiatic mainland where it is known at present from Johore and Muar but the line where it meets with the representative of the continental *cristatus* animal is not yet defined. The Singapore wild pig is probably of this species.